# Exhibit 28

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION EXAMINING OPERATIONS

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| Applicant: | Hopkins | Group Art Unit: | 3745 |
| Serial No.: | 10/806,775 | Examiner: | Nguyen, Ninh H. |
| Filed: | March 22, 2004 | Docket No: | Hunt:FanArr1 |
| Title: | Fan Array Fan Section in Air-Handling Systems | | |

# AMENDMENT

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March 15, 2005

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the September 15, 2004 Office action, please amend the above-identified patent application as follows:

**Amendments to the Specification** begin on page 2 of this paper.

**Amendments to the Claims** are reflected in the listing of claims that begins on page 4 of this paper.

**Remarks/Arguments** begin on page 11 of this paper.

**Amendments to the Specification:**

Please replace the paragraph beginning at page 2, line 4, with the following rewritten paragraph:

--Air-handling systems (also referred to as an air handler) have traditionally been used to condition buildings or rooms (hereinafter referred to as "structures"). An air-handling system is defined as a ~~structure~~ system that includes components designed to work together in order to condition air as part of the primary system for ventilation of structures. The air-handling system may contain components such as cooling coils, heating coils, filters, humidifiers, fans, sound attenuators, controls, and other devices functioning to meet the needs of the structures. The air-handling system may be manufactured in a factory and brought to the structure to be installed or it may be built on site using the necessary devices to meet the functioning needs of the structure. The air-handling compartment 102 of the air-handling system includes the inlet plenum 112 prior to the fan inlet cone 104 and the discharge plenum 110. Within the air-handling compartment 102 is situated the fan unit 100 (shown in FIGS. 1 and 2 as an inlet cone 104, a fan 106, and a motor 108), fan frame, and any appurtenance associated with the function of the fan (e.g. dampers, controls, settling means, and associated cabinetry). Within the fan 106 is a fan wheel (not shown) having at least one blade. The fan wheel has a fan wheel diameter that is measured from one side of the outer periphery of the fan wheel to the opposite side of the outer periphery of the fan wheel. The dimensions of the handling compartment 102 such as height, width, and airway length are determined by consulting fan manufacturers data for the type of fan selected.--

Please replace the paragraph beginning at page 18, line 1, with the following rewritten paragraph:

-- The fan unit chambers 244 shown in FIG. 17 may include one or more ~~one ore more~~ interior surface made from or lined with an acoustically absorptive material or "insulation surface" 248. Going against conventional industry wisdom that surfaces cannot be placed in close proximity with the fan units 200, the present invention places one or more insulation surfaces 248 at least partially around each fan unit 200 without disrupting air flow. The insulation surfaces 248 may include one or more of the sides, top, bottom, front, or back. Exemplary types of insulation include, but are not limited to traditional insulation board (such as that made from inorganic glass fibers (fiberglass) alone or with a factory-applied foil-scrim-kraft (FSK) facing or a factory-applied all service jacket (ASJ)) or alternative insulation such as open cell foam such as that disclosed in U.S. Patent Application No.10/606,435, which is assigned to the assignee of the present invention, and which the disclosure of which is hereby incorporated by reference herein. Together, the insulation surfaces 248 on the fan unit chambers 244 tend to function as a coplanar silencer. Some of the benefits of using the coplanar silencer include (1) no added airway length for splitters, (2) no pressure drop, and/or (3) relatively low cost. The acoustic advantages of this and other embodiments make the present invention ideal for use in concert halls, lecture halls, performing arts centers, libraries, hospitals, and other applications that are acoustically sensitive.--

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): A fan array fan section in an air-handling system comprising:

(a) at least ~~three~~ six fan units;

(b) said at least ~~three~~ six fan units arranged in a fan array;

(c) an air-handling compartment within which said fan array of fan units is positioned; and

(d) an array controller for controlling said at least ~~three~~ six fan units to run at substantially peak efficiency by strategically turning selective ones of said at least six fan units on and off.

Claim 2 (currently amended): The fan array fan section in an air-handling system of claim 1, wherein said at least ~~three~~ six fan units are plenum fans.

Claim 3 (original): The fan array fan section in an air-handling system of claim 1, wherein said air-handling compartment has an airway path, said airway path being less than 72 inches.

Claim 4 (currently amended): The fan array fan section in an air-handling system of claim 1, wherein said at least ~~three~~ six fan units are a plurality of fan units arranged in a fan array configuration selected from the group consisting of:

(a) a true array configuration;

(b) a spaced pattern array configuration;

(c) a checker board array configuration;

(d) rows slightly offset array configuration;

(e) columns slightly offset array configuration; and

(f) a staggered array configuration.

Claim 5 (currently amended): The fan array fan section in an air-handling system of claim 1, wherein said at least ~~three~~ six fan units [[are plenum fans]] include at least two vertically arranged fan units.

Claim 6 (currently amended): The fan array fan section in an air-handling system of claim 1, wherein each of said at least ~~three~~ six fan units is positioned within a fan unit chamber.

Claim 7 (currently amended): The fan array fan section in an air-handling system of claim 1, wherein each of said at least ~~three~~ six fan units is suspended within a respective said fan unit chamber such that there is an air relief passage therebelow.

Claim 8 (currently amended): The fan array fan section in an air-handling system of claim 1, wherein each of said at least ~~three~~ six fan units is positioned within a fan unit chamber having at least one acoustically absorptive insulation surface.

Claim 9 (original): The fan array fan section in an air-handling system of claim 1, wherein each of said at least ~~three~~ six fan units are mounted in a grid system.

Claim 10 (original): The fan array fan section in an air-handling system of claim 1, wherein each of said at least ~~three~~ six fan units has a fan wheel diameter, wherein spacing between said at least ~~three~~ six fan units is less than 60% of said fan wheel diameter.

Claim 11 (currently amended): A fan array fan section in an air-handling system comprising:

(a) an air-handling compartment;

(b) a plurality of fan units;

(c) said plurality of fan units arranged in a fan array;

(d) said fan array having at least one fan unit arranged vertically on at least one other fan [[unit.]] unit;

(e) said fan array positioned within said air-handling compartment; and

(f) said air-handling compartment positionable within a structure such that said air-handling system conditions the air of said structure.

Claim 12 (currently amended): The fan array fan section in an air-handling system of claim 11 further comprising an array controller programmed to operate said plurality of fan units at peak efficiency by strategically turning on and off selective ones of said plurality of fan units.

Claim 13 (original): The fan array fan section in an air-handling system of claim 11, wherein said plurality of fan units are plenum fans.

Claim 14 (original): The fan array fan section in an air-handling system of claim 11, wherein said air-handling compartment has an airway path, said airway path being less than 72 inches.

Claim 15 (original): The fan array fan section in an air-handling system of claim 11, wherein said plurality of fan units are arranged in a fan array configuration selected from the group consisting of:

(a) a true array configuration;

(b) a spaced pattern array configuration;

(c) a checker board array configuration;

(d) rows slightly offset array configuration;

(e) columns slightly offset array configuration; and

(f) a staggered array configuration.

Claim 16 (original): The fan array fan section in an air-handling system of claim 11, wherein each of said plurality of fan units is positioned within a fan unit chamber.

Claim 17 (currently amended): The fan array fan section in an air-handling system of claim 11, wherein each of said plurality of fan units is suspended within a respective said fan unit chamber such that there is an air relief passage therebelow.

Claim 18 (currently amended): The fan array fan section in an air-handling system of claim 11, wherein each of said plurality of fan units is positioned within a fan unit chamber having at least one acoustically absorptive insulation surface.

Claim 19 (original): The fan array fan section in an air-handling system of claim 11, wherein each of said plurality of fan units is mounted in a grid system.

Claim 20 (original): The fan array fan section in an air-handling system of claim 11, wherein each of said plurality of fan units has a fan wheel diameter, wherein spacing between said plurality of fan units is less than 60% of said fan wheel diameter.

Claim 21 (new): The fan array fan section in an air-handling system of claim 1, further comprising an array of backdraft dampeners, each backdraft dampener in line with a respective fan unit.

Claim 22 (new): The fan array fan section in an air-handling system of claim 11, further comprising an array of backdraft dampeners, each backdraft dampener in line with a respective fan unit.

Claim 23 (new): The fan array fan section in an air-handling system of claim 1, wherein each fan unit has a peak efficiency operating range outside of which it operates at a reduced efficiency, wherein said array controller is programmed to operate said at least six fan units at substantially peak efficiency by strategically turning off at least one fain unit operating at reduced efficiency and running the remaining fan units within said peak efficiency operating range.

Claim 24 (new): The fan array fan section in an air-handling system of claim 11, further comprising an array controller, wherein each fan unit has a peak efficiency operating range outside of which it operates at a reduced efficiency, wherein said array controller is programmed to operate said plurality of fan units at substantially peak efficiency by strategically turning off at least one fain unit operating at reduced efficiency and running the remaining fan units within said peak efficiency operating range.

Claim 25 (new): The fan array fan section in an air-handling system of claim 1, said array controller is programmed to operate said at least six fan units at peak efficiency for a performance level based on a criteria selected from the following group of criteria:

(a) air volume;
(b) level of air flow;
(c) pattern of air flow; and
(d) number of fan units to operate.

Claim 26 (new): The fan array fan section in an air-handling system of claim 11, further comprising an array controller for controlling said plurality of fan units to run at substantially peak efficiency by strategically turning selective ones of said plurality of fan units on and off, said array controller programmed to operate said plurality of fan units at peak efficiency for a performance level based on a criteria selected from the following group of criteria:

(a) air volume;

(b) level of air flow;

(c) pattern of air flow; and

(d) number of fan units to operate.

Claim 27 (new): The fan array fan section in an air-handling system of claim 1, said array controller is programmed to operate said at least six fan units to produce a stable operating point and eliminate the surge effects.

Claim 28 (new): The fan array fan section in an air-handling system of claim 11, further comprising an array controller for controlling said plurality of fan units, said array controller is programmed to operate said plurality of fan units to produce a stable operating point and eliminate the surge effects.

Claim 29 (new): The fan array fan section in an air-handling system of claim 1, said array controller is programmed to selectively control the speed of each of said at least six fan units to run at substantially peak efficiency.

Claim 30 (new): The fan array fan section in an air-handling system of claim 11, further comprising an array controller for controlling said plurality of fan units, said array controller is programmed to selectively control the speed of each of said plurality of fan units to run at substantially peak efficiency.

Claim 31 (new): The fan array fan section in an air-handling system of claim 1, said air-handling compartment positionable within a structure such that said air-handling system conditions the air of said structure.

REMARKS

Claims 1-31 are pending in the application after this amendment. The amendment and/or addition of claims is not to be considered in any way an indication of applicant's position on the merits of the amended and/or added claims. In the following sections of the Amendment the rejections set forth by the Examiner in the September 15, 2004, Office action are addressed. These rejections are respectfully traversed, and detailed arguments are set forth below.

A preliminary matter, the specification has been amended to correct a minor grammatical error. It is submitted that this amendment should not be objectionable.

Also as a preliminary matter, applicant submits herewith an Information Disclosure Statement (IDS) and references of which applicant was recently made aware. Applicant respectfully requests that the references set forth on the IDS be considered and acknowledged.

The Examiner rejected claims 1-20 under 35 USC §102(b) as being anticipated by U.S. Patent No. 4,767,262 to Simon (the "Simon reference"). Applicant has also reviewed U.S. Patent No. 6,072,397 to Ostrowski and U.S. Patent No. 5,370,576 to Krofchalk. None of these cited references is directed to a fan array fan section in an air-handling system as defined in the specification of the present application. (See page 2 of the original specification. "An air-handling system is defined as a system that includes components designed to work together in order to condition air as part of the primary system for ventilation of structures." Structures are defined in the specification as buildings or rooms.) Applicant would like to note that he considers these references nonanalogous as the issues relating to fans for computer systems or small electrical appliances operate under completely different principles than those applicable to air-handling systems. Issues that are significant to air-handling systems are non-issues in fans for computer systems or small electrical appliances. For example, the quantity of air and the weight of the fan units are non-issues in fans for

computer systems or small electrical appliances, but are significant to air-handling systems. Another non-issue in fans for computer systems or small electrical appliances that is significant to air-handling systems is the control over air delivery rates to meet varying demands under varying pressure loads and the controlling of the fan array to achieve optimum efficiency by selectively turning fans off or on to meet system diversity caused by filter loading and/or cooling requirements related to the process or external environment.

The references provided with the enclosed IDS (the "IDS references") may teach an air-handling compartment within which an fan array of fan units may be positioned. Applicant specifically does not admit that the IDS references are prior art. However, for the purpose of furthering prosecution applicant will address the IDS references as though they are prior art. The IDS references disclose the RL Series Rooftop Conditioners produced by AAON, Inc. A rooftop conditioner has different requirements than an air-handling compartment that is positionable within a structure. For example, whereas a rooftop conditioner is primarily concerned with structure-borne sound, airborne sound is not a significant concern. The spring mounting of the assembly, for example, is an attempt to reduce structure borne sound. It should be noted that the IDS references also do not teach or suggest other claimed elements which are addressed below in discussions of the individual claims.

Applicant would like to remind the Examiner that there are many reasons why the combination of the IDS references and a nonanalogous reference such as the Simon reference would be improper. For example, the mere fact that the references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). There is no teaching in either reference that such a combination is desirable. Further, although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." *In re Fritch*, 972 F.2d at 682, 16 USPQ2d at 1432.) There is no suggestion or motivation in either reference to do so. Still further,

the fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish *prima facie* obviousness. Finally, the proposed modification cannot render the prior art unsatisfactory for its intended purpose (MPEP 2143.01). The IDS references would not be able to function properly if the Simon half-shell casings were used to support the IDS reference fan units because the Simon material (talc-reinforced polypropylene) would simply not be able to support the weight of the IDS reference fan units nor would the use of talc-reinforced polypropylene in any capacity in the vicinity of the fan result in a reduction in fan sound levels.

The following paragraphs are directed to specific claims. Dependent claims not specifically addressed are allowable for the same reason as discussed for their respective independent claims as well as for the limitations contained therein.

Claim 1 and the claims dependent thereon have been amended to specifically recite "at least six fan units." As set forth in the enclosed DECLARATION OF LAWRENCE G. HOPKINS, a system having six or more fans has unique properties that are not present in systems having less fans and it would not have been obvious to increase the number of fans. The substantially improved results would have been unexpected to one skilled in the art.

Claims 1 and 12 specifically recite an array controller programmed to operate the fan units at peak efficiency. The Simon reference teaches two ways to control the fans. First, the user can manually control the number of fans by inserting and connecting the desired number of fans. (Column 3, lines 21-23.) Second, an electric control block can supply a control voltage to the number of fans provided in the fan slide in unit to control the speed of the fans. (Column 3, lines 24-33.) In other words, the Simon reference allows no air to be supplied by manually removing or disconnecting the fan. Otherwise, all the fans are controlled by a single control voltage, that can be varied, but it runs all the fans at the same speed. At lower speeds, the fans would be inefficient. The IDS references appear to recognize that fan units may be taken off-line (e.g. for maintenance). However, these references do not appear to teach or suggest any means by which a controller can operate said plurality of fan units at

peak efficiency by strategically turning on and off selective ones of said plurality of fan units.

Claims 11 and 31 specifically recite an air-handling compartment positionable within a structure such that said air-handling system conditions the air of said structure. The references cited by the examiner do not teach or suggest this limitation because they do not condition the air of the structure. For purposes of argument only and without making such an admission, if the PC casing is equivalent to the air-handling compartment, then the room or building in which the PC casing is positioned must be the structure, but the "air-handling system" inside the PC casing does not condition the air of the structure. The IDS references also do not teach or suggest such a system positionable within a structure, but specify that their systems are positionable on the rooftop, above a structure.

Claims 3 and 14 specifically recite an airway path being less than 72 inches. The IDS references do not teach or suggest a shortened airway path. The IDS references disclose airway paths between 75.5 inches and 90 inches. The AAON references to not teach or suggest that the airway paths could be shortened or that there is any desirability to do so. In a system that is internal to a structure, because real estate (e.g. structure space) is extremely expensive, a larger size air-handling compartment is extremely undesirable. Using the present invention, reducing the size of the fan unit and motor reduces the length of the discharge plenum. Similarly, reducing the size of the inlet cone reduces the length of the inlet plenum. The length of the discharge plenum can also be reduced because air from the fan array fan section in the air-handling system of the present invention is substantially uniform whereas the prior art air-handling system has points of higher air velocity and needs time and space to mix so that the flow is uniform by the time it exits the air-handling compartment. The fan array fan section in the air-handling system takes in air from the inlet plenum more evenly and efficiently than the prior art air-handling system so that the length of the inlet plenum may be reduced.

Claims 8 and 18 specifically recite that the fan unit chambers have at least one acoustically absorptive insulation surface. As set forth in the original specification, this goes against conventional industry wisdom that surfaces cannot be placed in close proximity with the fan units without disrupting air flow. In the September 15, 2004 Office action the Examiner sites column 2, lines 26-38 of the Simon reference as teaching insulation. Applicant has reviewed this reference carefully and believes that there is a distinction between the material from which the Simon half-shell casings are constructed and the acoustically absorptive insulation surface(s) of the presently claimed invention. Applicant believes that the Simon material must be rigid. This belief is based on the fact that the Simon half-shell casings must support the weight of the individual fans and the fact that the suggested material (talc-reinforced polypropylene) is rigid material. As a rigid material, the Simon material would not be an acoustically absorptive material (insulation material). Applicant believes that the noise that the Simon material would absorb would be structure-borne noise – not airborne noise. None of the IDS references teach or suggest the use of acoustically absorptive insulation to effectively attenuate air-borne noise. The insulation used in the IDS references is thermal insulation and is only placed on the exterior surface of the air-handling compartment.

Claims 10 and 20 specifically recite the spacing between the fan units being less than 60% of the fan wheel diameter. The IDS references do not teach or suggest such spacing.

Claims 23 and 24 specifically recite that the array controller is programmed to operate the fan units at substantially peak efficiency by strategically turning off at least one fain unit operating at reduced efficiency and running the remaining fan units within peak efficiency operating range. This feature is not taught or suggested by any of the known references.

New claims 25 and 26 specifically recite that the array controller is programmed to operate the six fan units at peak efficiency for a performance level

based air volume, level of air flow, pattern of air flow, or number of fan units to operate. This feature is not taught or suggested by any of the known references.

New claims 27 and 28 specifically recite that the array controller is programmed to operate the fan units to produce a stable operating point and eliminate the surge effects. This feature is not taught or suggested by any of the known references.

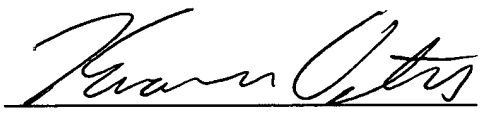
New claims 29 and 30 specifically recite that the array controller is programmed to selectively control the speed of each of the fan units to run at substantially peak efficiency. This feature is not taught or suggested by any of the known references.

In view of the above, it is submitted that the currently pending claims are patentable. Accordingly, the Examiner is requested to reexamine the application, to allow the claims, and to pass the application on promptly to issue.

A Petition for Extension of Time for Three months is enclosed herewith.

Please charge Deposit Account No. 50-2115 for any additional fees that may be required.

Respectfully submitted,



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